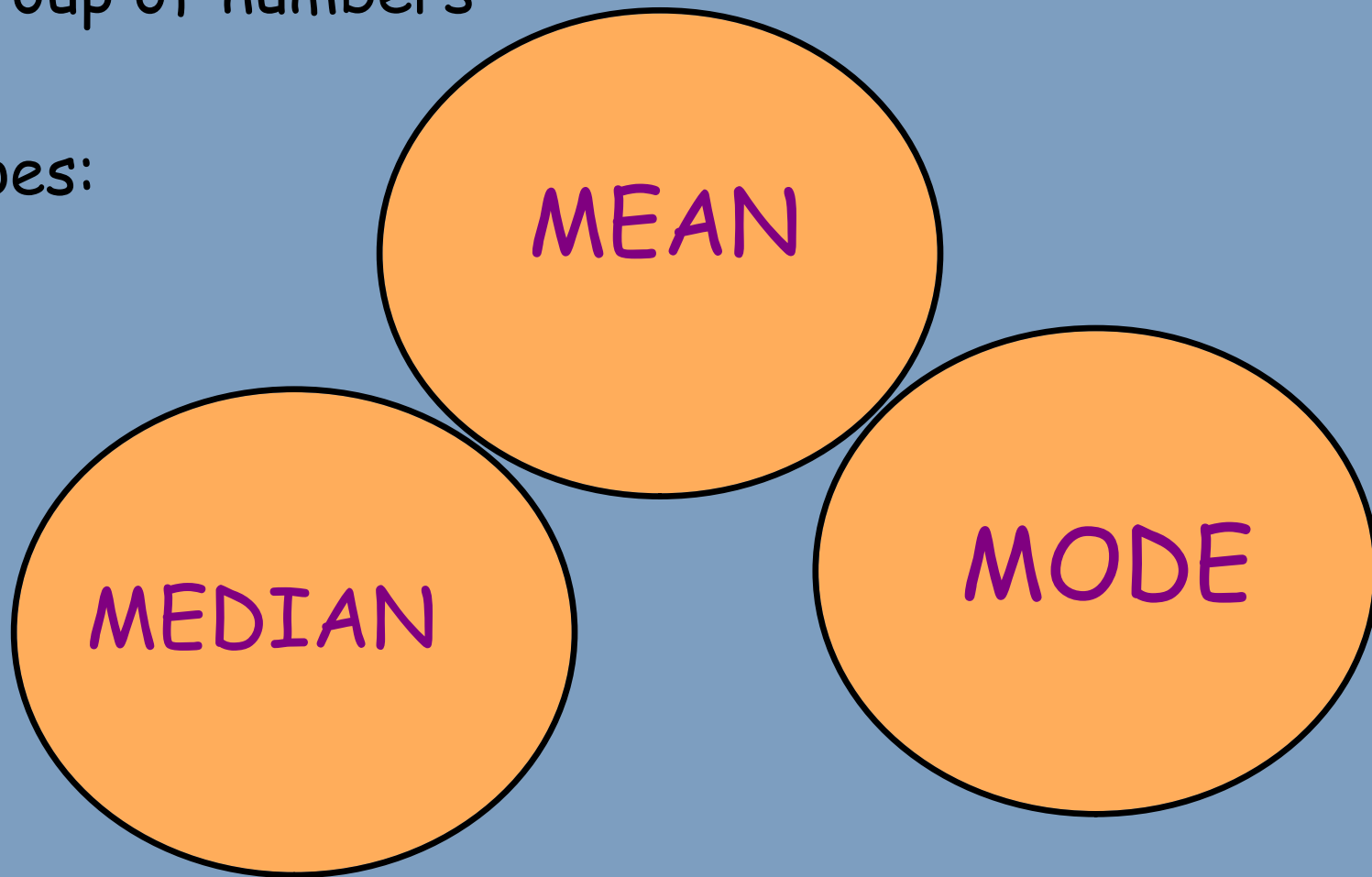


1.3 Describing Data

Curriculum Outcomes	Related Activities	Page in Text
<ul style="list-style-type: none"> calculate various statistics using appropriate technology, analyze and interpret the displays, and describe the relationships 	<ul style="list-style-type: none"> review computation and use of mean, median, and mode 	15
	<ul style="list-style-type: none"> determine the best average to use to describe a set of reaction time measurements 	16
<ul style="list-style-type: none"> calculate and apply mean and standard deviation using technology to determine if variation makes a difference 	<ul style="list-style-type: none"> determine data values that can be treated as unusual, or outliers, and look at ways to handle them 	15
	<ul style="list-style-type: none"> explore the limitations of using one piece of information to describe a set of data 	17
<ul style="list-style-type: none"> create and analyze plots using appropriate technology make and interpret frequency bar graphs while conducting experiments and exploring measurement issues 	<ul style="list-style-type: none"> interpret, create, and consider uses, advantages, and disadvantages of different graphs, that is, stem-and-leaf plots, box-and-whisker plots, frequency tables, histograms 	26
	<ul style="list-style-type: none"> consider appropriate data grouping to create histograms 	22
<ul style="list-style-type: none"> analyze statistical summaries, draw conclusions, and communicate results about distributions of data 	<ul style="list-style-type: none"> use the shape of a graph to determine an informal measure of the spread or distribution of the data 	22

Measures of Central Tendency

- ways to identify one number that characterizes a group of numbers
- Types:



MODE

- the number that appears most often in a set of data.
- there can be more than one mode in a set of data.

Example:

Find the mode of this group of numbers.

20, 19, 26, 18, 26

Step 1: Arrange the numbers from least to greatest.

18, 19, 20, 26, 26

Step 2: Find the number that is repeated the most.

18, 19, 20, 26, 26

The mode is 26.

MEAN

- the sum of a set of numbers; divided by the total number of numbers in the set. (average)

- Symbol = \overline{x}

- Equation = $\overline{x} = \frac{\text{sum of values}}{\# \text{ values}}$ $\overline{x} = \frac{\Sigma}{\# \text{ values}}$

Example:

Find the mean of the group of numbers:

7, 11, 12, 18, 23, 25

Step 1: Add all the numbers.

$$7 + 11 + 12 + 18 + 23 + 25 = 96$$

Step 2: Divide the sum by the number of items.

$$96 \div 6 = 16$$

The mean is 16.

MEDIAN

- the middle value or midpoint of a set of numbers arranged in order

Example:

Find the median of a group of numbers.

20, 19, 23, 18, 26

Step 1: Arrange the numbers from least to greatest.

18, 19, 20, 23, 26

Step 2: Find the middle number.

~~18~~, ~~19~~, 20, ~~23~~, ~~26~~

The median is 20.

What happens when there is 2 middle numbers??

Example:

~~1~~/~~8~~, ~~1~~/~~9~~, **20**, **22**, ~~2~~/~~3~~, ~~2~~/~~6~~

Step 3: Find the mean of the two middle numbers.

$$20 + 22 = 42$$

$$42 \div 2 = 21$$

The median is 21.

Outliers

- Values that are significantly different ("lie outside") from the majority of a set of data.
- They can affect the mean.

Example

What would the outlier of this data be?

4cm, 6cm, 5.3cm, 10.7cm, 3.2cm,
4.6cm, 6.6cm

The outlier is 10.7cm

Range

- the smallest number subtracted from the largest number

Example

What would the range of this data be?

8, 10, 6, 9, 8, 7

Largest = 10

Smallest = 6

$$10 - 6 = 4$$

The range is 4

Homework

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Find the mode, mean & median for each of the following:

1. 5, 12, 12, 28, 23, 31

2. 50, 67, 79, 45

3. 4, 1, 7, 3, 1, 4, 8, 9, 9

4. 25, 25, 25, 29, 27, 27